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RECYCLED MATERIALS MARKETS: FEBRUARY 1975 - A SUMMARY

by Stephen A. Lingle*

This paper provides a brief review of the market demand for materials recovered from municipal solid waste. More comprehensive discussions may be found in various EPA publications including both the First and Second Reports to Congress on Resource Recovery and Source Reduction. This paper briefly reviews market conditions during the 1973-1974 period and describes factors underlying longer term trends in recycled materials markets.

The Market Situation in January 1975

Recycled materials markets in the 1973-1974 period experienced both the highest and lowest prices of several decades. Late 1973 and early 1974 was a period of rapidly increased demand for recycled materials and record high prices. However, in late 1974, prices of many recycled materials declined significantly, due to reduction in both domestic and export demand. By January 1975, scrap steel, copper and aluminum prices had dropped by approximately 50 percent, 60 percent, and 30 percent respectively from their 1974 highs. Wastepaper prices were one-third to one-fourth the levels of only a few months before. Many businesses, cities, and charitable organizations were unable to sell some scrap materials at all, particularly paper.

Causes of the Market Turnaround

The wastepaper market provides a good example of the nature of markets for recycled materials and dramatically illustrates the market turnarounds in 1973 and 1974.

The period January 1973 to March 1974 was a time of unprecedented high demand for manufactured goods. This was essentially a material shortage period. Almost all paper mills were operating at full capacity. Virgin pulp capacity could not be expanded in the short term as this requires substantial capital investment and construction. Therefore, many paper mills that generally would use little or no wastepaper were

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bidding for wastepaper supplies. In addition, export demand for wastepaper increased significantly during this period. The combination of these two factors led to a sharp rise in wastepaper demand and prices.

By March 1974, four factors began operating that together brought about a sharp curtailment in wastepaper consumption and decrease in wastepaper prices.

1. Paper and paperboard consumption began leveling off, allowing virgin pulping capacity to "catch-up". As a result, many virgin-oriented mills dropped out of the wastepaper market.

2. Production levels in the paper industry declined due to the general economic recession in the nation. This was especially significant in the construction paper sector due to the decline in the housing industry.

3. Wastepaper exports declined.

4. Inventories of wastepaper supplies had increased due to the "demand pull" of previous months.

These factors in combination eventually resulted in the depressed market conditions of late 1974-early 1975. The market situation will probably improve in 1975, and prices and consumption will probably settle out at pre-1973 levels by the end of the year. This increase and decrease in prices and consumption is typical in the wastepaper industry. Wastepaper is the last fiber to be used in times of shortage and the first to be discontinued during cut-backs.

What is the Longer Term Trend?

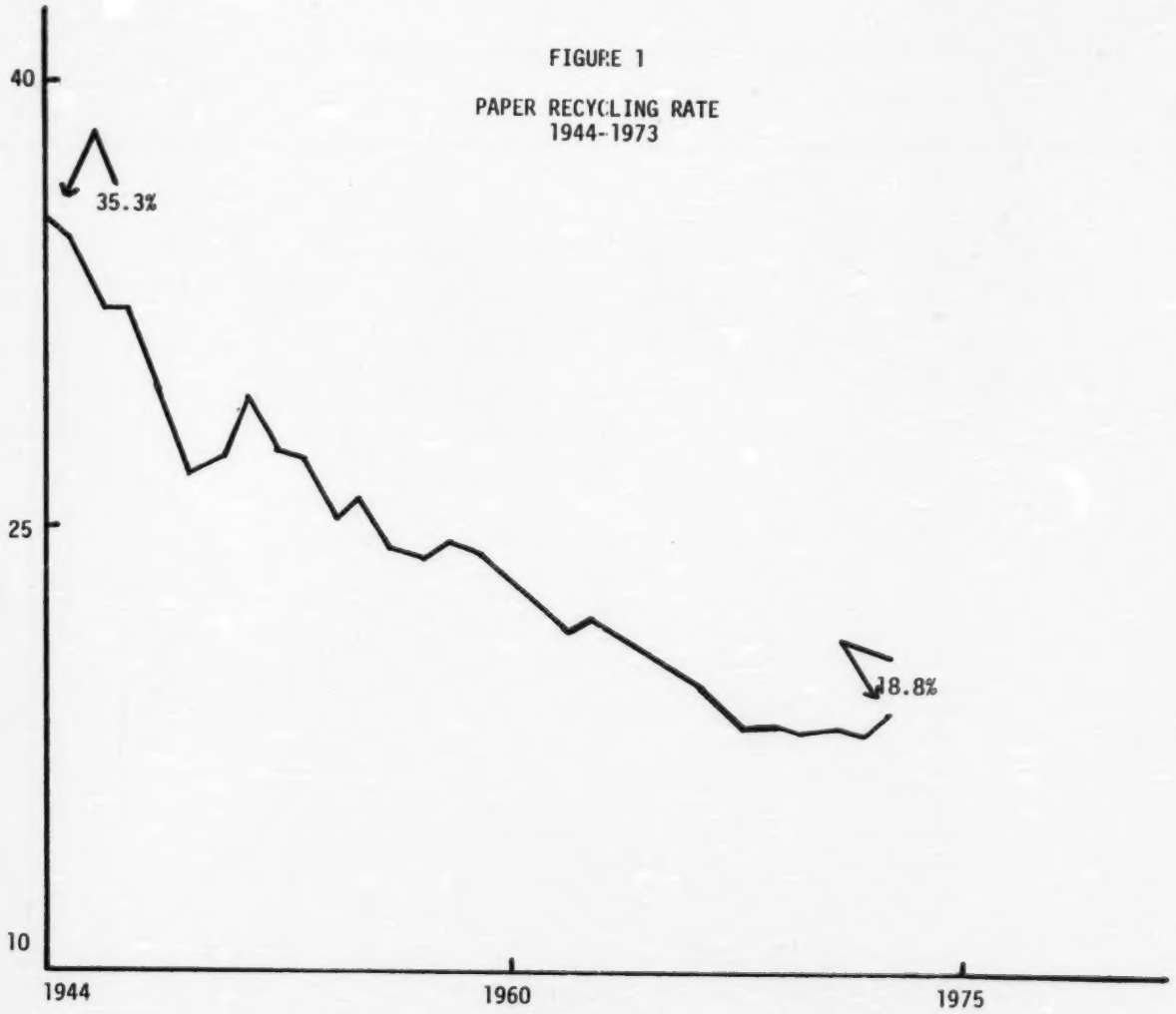
Significantly, the recycling rate (domestic recycled material consumption as a fraction of overall domestic material consumption) for many secondary materials has declined for many years. The recycling rate for paper declined from 35 percent in 1944 to approximately 19 percent at the end of 1974 (Figure 1).

The wide fluctuations that have occurred in wastepaper markets since 1950 are illustrated by the wholesale price index shown in Figure 2. Prices of other secondary materials show similar instability. Scrap steel prices in 1974 are shown in Figure 3. It was the fluctuating market demand, similar to that which occurred in 1973 and 1974, that caused these price fluctuations. Since prices for virgin raw materials have shown no similar fluctuations, this suggests that secondary materials are used, to a significant degree, as commodities of last resort--phased in or out with changes in capacity utilization and total production.

This is particularly true of materials recycled from post-consumer waste. The scrap generated in manufacturing and converting plants is recycled at a relatively consistent rate due to its purity and proximate point of generation. Demand fluctuations thus impact most significantly on efforts to recover materials from post-consumer solid waste.

FIGURE 1

PAPER RECYCLING RATE
1944-1973

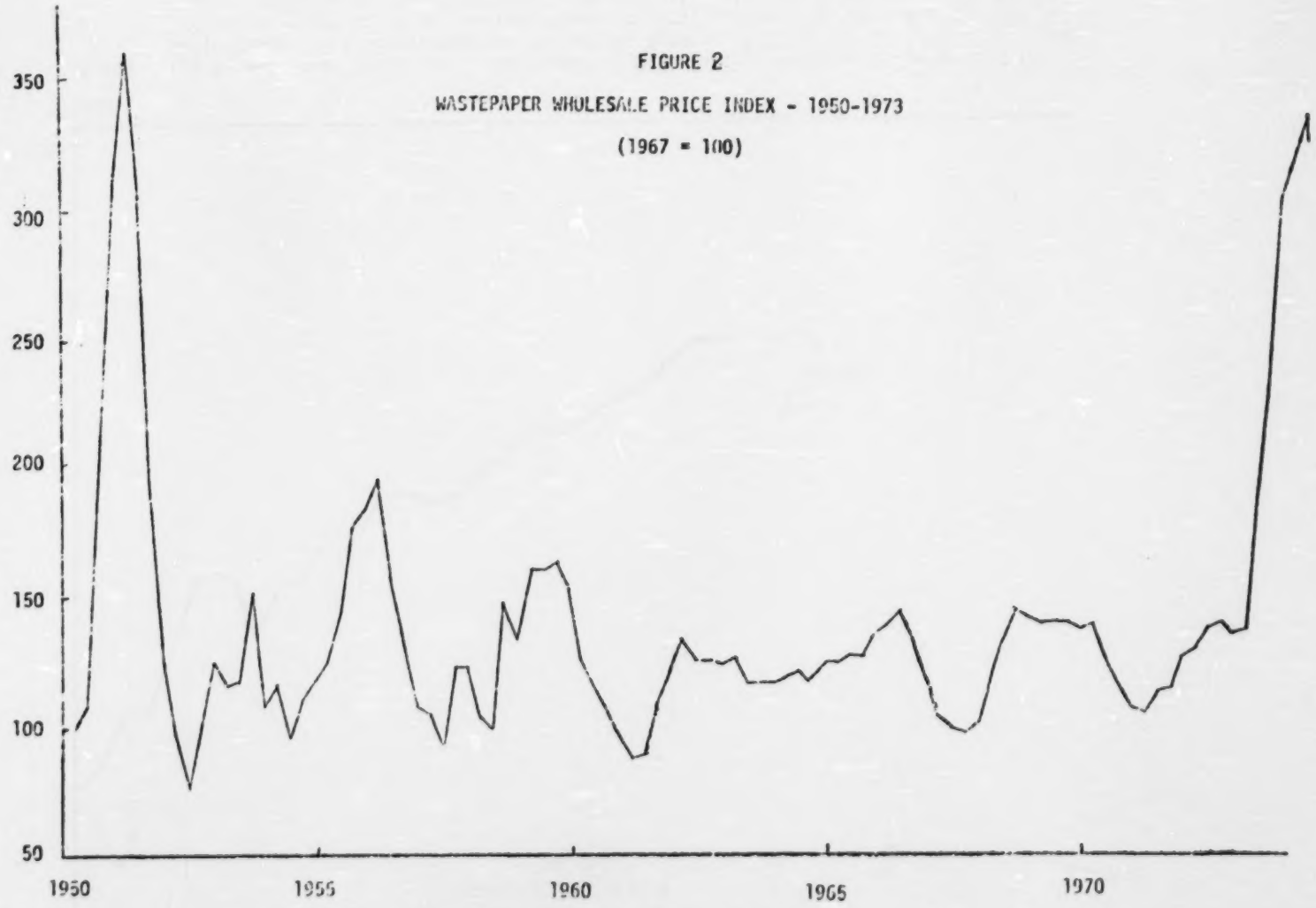


SOURCE: (1944-1969 Data) Darnay, A., and Franklin, W.E. Salvage markets for materials in Solid Waste. U.S. Environmental Protection Agency, 1972, p. 45-18; (1970-1972 Data). EPA calculations based on American Paper Institute, Statistics of Paper and Paperboard - 1973, p. 43, 61; (1972 Data) EPA estimate based on preliminary U.S. Dept. of Commerce data (1973).

FIGURE 2

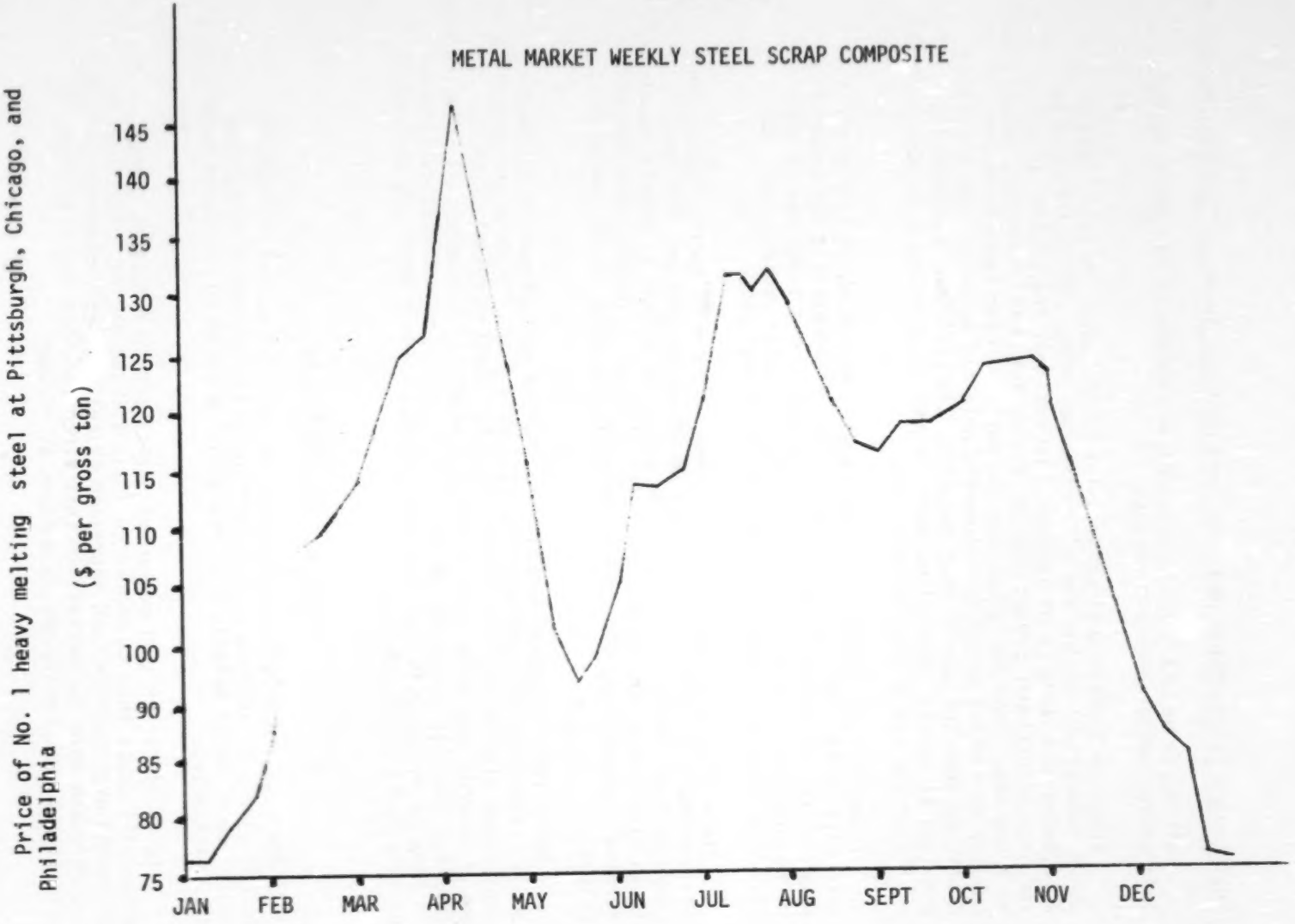
WASTEPAPER WHOLESALE PRICE INDEX - 1950-1973

(1967 = 100)



SOURCE: U.S. Bureau of Labor Statistics, Code 09-12.

FIGURE 3


METAL MARKET WEEKLY STEEL SCRAP COMPOSITE
Price of No. 1 heavy melting steel at Pittsburgh, Chicago, and Philadelphia
($ per gross ton)
145
140
135
130
125
120
115
110
105
100
90
85
80
75
JAN
FEB
MAR
APR
MAY
JUN
JUL
AUG
SEPT
OCT
NOV
DEC

What Causes Fluctuations and Long-Term Declines in Waste Materials Markets?

The paper industry again provides an example of the basic factors influencing waste materials markets.

There is a historical orientation in the paper industry (and in other industries) to the use of virgin resources. While this can be attributed to a variety of factors, the vertical integration of the industry into timber production (or mining for metal consuming industries) is a key one. This has given the raw material user industries the ability to control a stable and predictable raw material supply while profiting from the use of that material. In addition, tax benefits provided as capital gain allowances (or depletion allowances for minerals) subsidize the use of virgin materials.

These factors combine to create a user market which favors virgin materials rather than recycled materials. EPA presently has underway a study of the economics of wastepaper versus virgin fiber use in the paper industry. Table 1 shows estimates of total process cost and return on investment for "virgin" and "recycled" paper mills.

These data show that in a predominant number of cases, the return on investment of mills using virgin resources is greater than that of recycled fiber mills. Even in cases where the return is nearly equivalent, it is likely that the virgin mill will continue to predominate due to vertical integration, industry experience, and more stable raw material prices.

While these economic comparisons are generalizations which cannot be representative of each specific mill situation, the data are generally consistent with an industry situation which finds marginal units of waste material use above the 20 percent level to be economically unattractive. The fact that there are not large differences in economic attractiveness in many cases suggests that for many products the economic balance could be relatively easily shifted.

Prognosis for the Future

The weak and erratic performance of recycled materials markets is not likely to improve unless existing mills permanently increase their use of waste materials or new mills designed to use waste materials are constructed.

It is difficult to foresee any normal market forces at present which will cause this to happen to a significant degree. Possible decreased availability (and increased price) of virgin materials in the future would move the markets in this direction, but the time frame or severity of such conditions is unknown at present.

TABLE 1

COMPARATIVE ECONOMICS OF PRODUCING PRODUCTS
FROM VIRGIN AND SECONDARY FIBER

($ per Metric Ton)

Product	% of Industry Output	Total Delivered Cost	Return on Fixed Capital
LINERBOARD	20		
100% Virgin		137	17.9
100% Secondary		169	8.7
80% Virgin; 20% Secondary		140	17.6
CORRUGATED MEDIUM	9		
85% Virgin; 15% Secondary		146	13.7
100% Secondary		157	11.8
53% Virgin, 48% Secondary		148	12.7
NEWSPRINT	6[1]		
100% Virgin		204	6.2
100% Secondary		194	10.6
67% Virgin; 33% Secondary		200	7.4
BOXBOARD	15		
100% Virgin		249	11.3[2]
100% Secondary		203	9.3[2]
TISSUE	6		
100% Virgin		257	*
100% Secondary		393	*
67% Virgin; 33% Secondary		288	*
PRINTING PAPER	22		
(Bond Type)			
100% Virgin		315	22.5
100% Secondary		422	4.2
67% Virgin; 22% Secondary		343	20.5
(Book Type)			
100% Virgin		323	21.8
100% Secondary		439	1.6
50% Virgin; 50% Secondary		367	19.0
(Groundwood Type)			
100% Virgin		269	6.3
100% Secondary		324	Negative
67% Virgin; 33% Secondary		269	6.3

[1]Approximately 70 percent of the newsprint consumed in the U.S. is imported.

[2]There is a large differential in selling price due to strength and weight characteristics.

*Data not available.

Increasing costs of waste collection and disposal to cities also suggest a greater attractiveness of resource recovery. Unfortunately, these costs (or cost savings due to resource recovery) are not fully realized by the industries that must use these materials, and these costs are largely not factored into the economics of industry recycling.

Significant changes in waste materials markets appear unlikely at this time in the absence of external forces.

Federal measures which might be appropriate to stimulate waste material use (such as tax credits to industry for use of recycled materials or charges to industry for use of virgin materials) are currently being investigated by EPA.

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